Bridging the Burdekin—the Silver Link to the North

Challenging the floodwaters of the Burdekin

Burdekin River floods frequently isolated the north from southern and central Queensland. The low level rail bridge completed in 1913 was often closed for long periods by wet season floods.

In 1946 the Coordinator General of Public Works, engineer John Kemp authorised construction of a bridge. Work commenced in 1947, but frequent interruptions by flooding, notably in 1949 and 1951, meant that the bridge piers were not completed until 1953. The superstructure was completed four years later. Queensland Premier Vince Gair officially opened the bridge, known as the Silver Link, on 15 June 1957. Construction had cost $6 million, and at any one time more than 250 men across several trades worked on the project.

Bridge pier construction.

The engineers of the Silver Link

James Holt, Chief Engineer of the Department of the Coordinator General directed the project, with John Kindler as Resident Engineer. Both had worked on the Sydney Harbour and Story Bridges. Several other eminent Queensland engineers worked on the bridge, including Harry Lowe and Bill Hansen, both Commissioners of Main Roads in later life, and David Garland, subsequently Chief Engineer of the Main Roads Department. C.H.V. Harding (Vere) (of the now Cardno and Davies) and N.J.Ullman (Noel) (later formed Ullman and Nolan) were assistant engineers to Harry Lowe. Long-time Cairns City Engineer Graeme Haussmann served as a Queensland Railways cadet on the bridge. Colin O'Connor (subsequently Professor Emeritus) developed construction procedures for the trusses.

Built on sand

The river bed at the crossing is made up of sand more than 50 metres deep. The bridge is supported by waterproof concrete caissons measuring 17m x 7.6m, sunk through the sand 30m below bed level, and 15m below the calculated level of worst scour. Vertical sinking into the sand was achieved by launching the cutting edge from a platform 5m above the river bed, and then constructing the reinforced concrete caisson on top of the cutting edge.

Bridge pier construction.

The bridge superstructure

7000 tonnes of high strength steel was used in the truss superstructure. Twenty-two approach spans and 10 main spans each spanning 76.2m long make up the overall bridge length of 1103m. Frequent floods prevented use of traditional scaffolding for construction of the trusses, which had to be free cantilevered over successive piers.

High strength bolts rather than rivets were used because the specialist labour required for the extensive riveting was not available. In 1949 testing demonstrated that bolts would out-perform rivets. These test results paved the way for the development of later codes of practice. Bolts also enabled simpler and more rapid assembly.

Steelwork on bridge piers.

Completed Burdekin bridge with former low level rail crossing in foreground.

Engineers conquered the Burdekin

7000 people attended the opening in 1957 of the new high level bridge. This huge attendance at a rural site reflected the major benefit that Queensland engineers would provide for Queensland and Australia. The Silver Link provided at last an all-weather year-round coastal highway and railway link across the wide and majestic—especially in mighty flood—Burdekin River.

Maintenance

The Silver Link has had a significant impact on the economic development of North Queensland. Good maintenance will enable the bridge to continue providing service for years to come. While there are duplication proposals there are no replacement proposals.

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2010

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